ABSTRACT OF INVENTION

A process and an apparatus for obtaining a hydrogen product and a sulfur product from a feed gas. The feed gas is comprised of hydrogen sulfide, the hydrogen product is comprised of elemental hydrogen and the sulfur product is comprised of elemental sulfur. In the process, a first separating step separates the feed gas to obtain a first purified hydrogen sulfide fraction comprised of at least about 90 percent hydrogen sulfide by volume. A dissociating step dissociates hydrogen sulfide present in the first purified hydrogen sulfide fraction to convert it into a dissociated first purified hydrogen sulfide fraction comprised of elemental hydrogen and sulfur. A second separating step separates the dissociated first purified hydrogen sulfide fraction to obtain a hydrogen rich fraction comprised of elemental hydrogen. The sulfur product may also be obtained from the dissociated first purified hydrogen sulfide fraction. Finally, the hydrogen product is obtained from the hydrogen rich fraction. The apparatus is provided for performing the process.